Primer on

Illinois Gasoline Prices

This spring gasoline prices spiked in Illinois and the U.S.

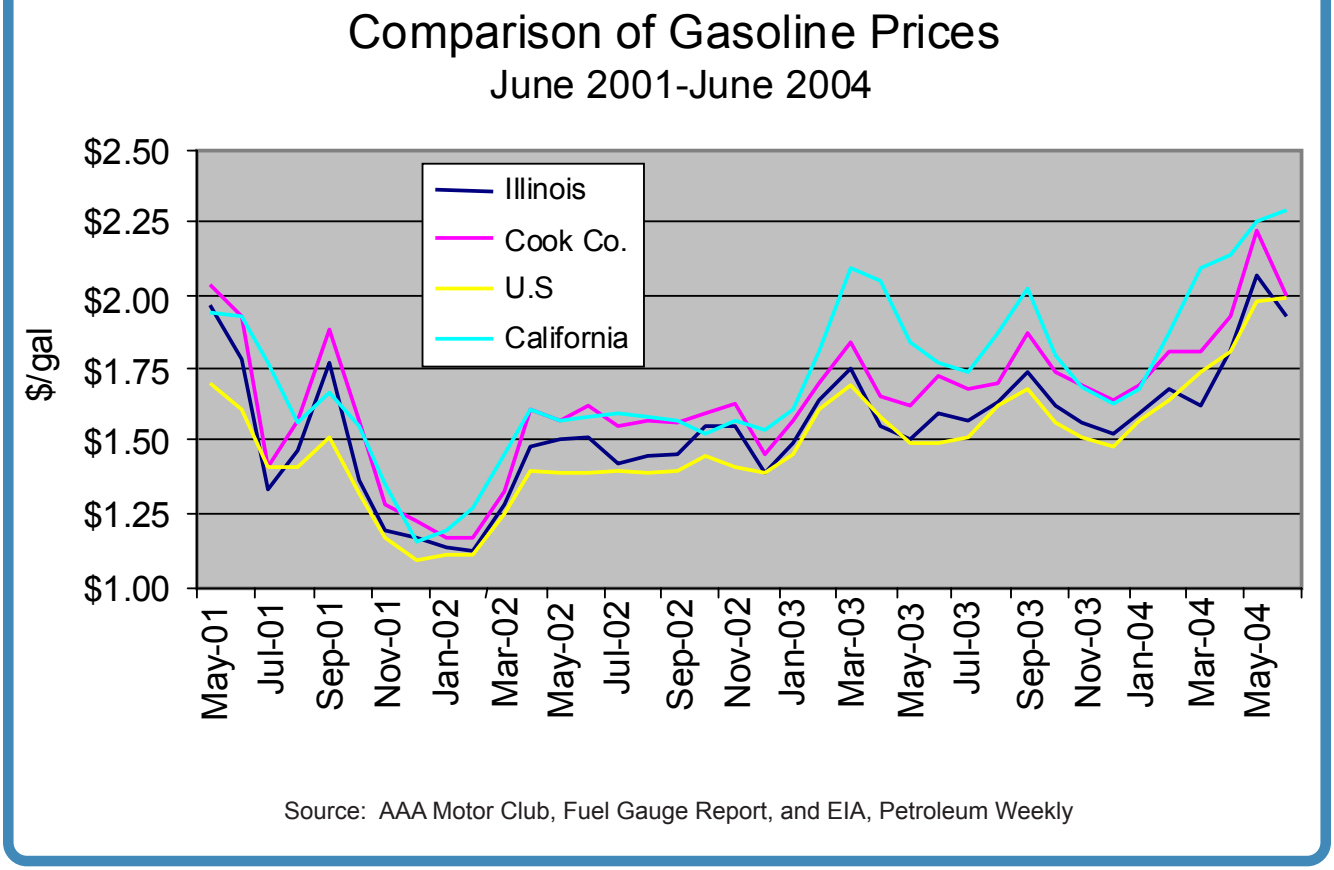
Why are gasoline prices so high?

What makes the price so volatile?

This primer tries to answer these questions. It depicts trends in gasoline prices both short and long term. It shows what components make up the price of gasoline in Illinois. And it highlights some of the supply and demand factors that influence the price Illinois consumers pay for a gallon of gasoline. Price volatility is most likely to occur when supplies are tight; that is, when demand exceeds the available supply.

Gasoline Prices

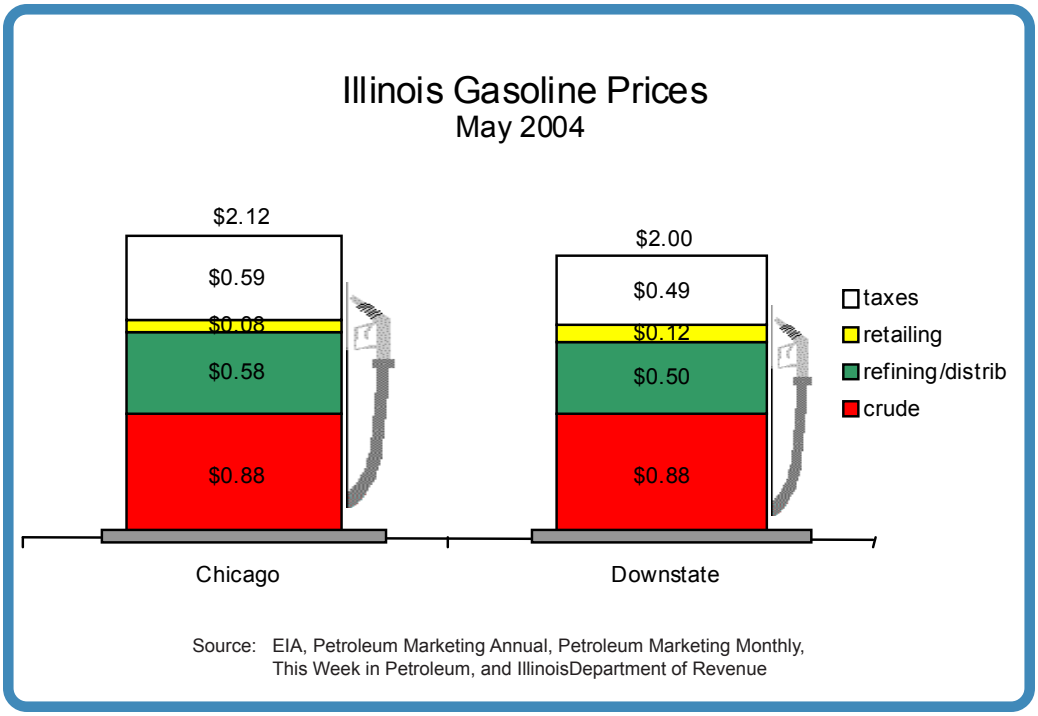
Illinois prices generally follow national trends.



Source: AAA Motor Club, Fuel Gauge Report, and EIA, Petroleum Weekly

- Prices in Illinois generally follow national trends, although prices average about $0.10 or so higher in Chicago.
- Illinois gasoline prices reached a peak of more than $2.00 per gallon during May of 2004.
- Only Californians experienced higher price increases this spring.

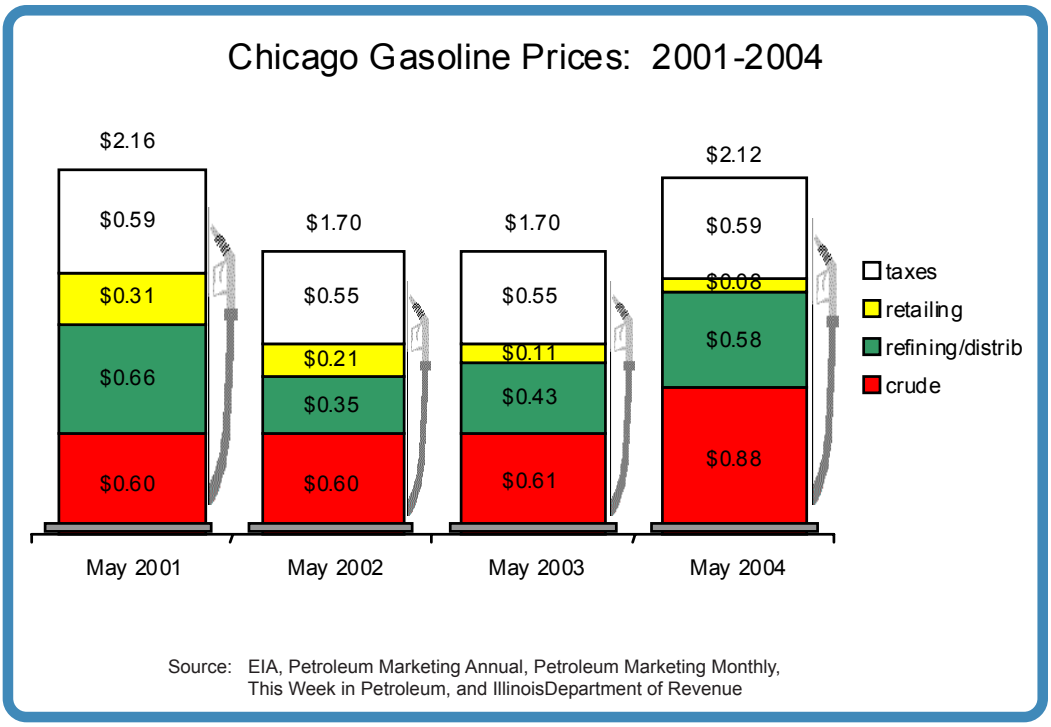
Crude oil prices are the largest component of the price of gasoline.



Source: EIA, Petroleum Marketing Annual, Petroleum Marketing Monthly, This Week in Petroleum, and IllinoisDepartment of Revenue

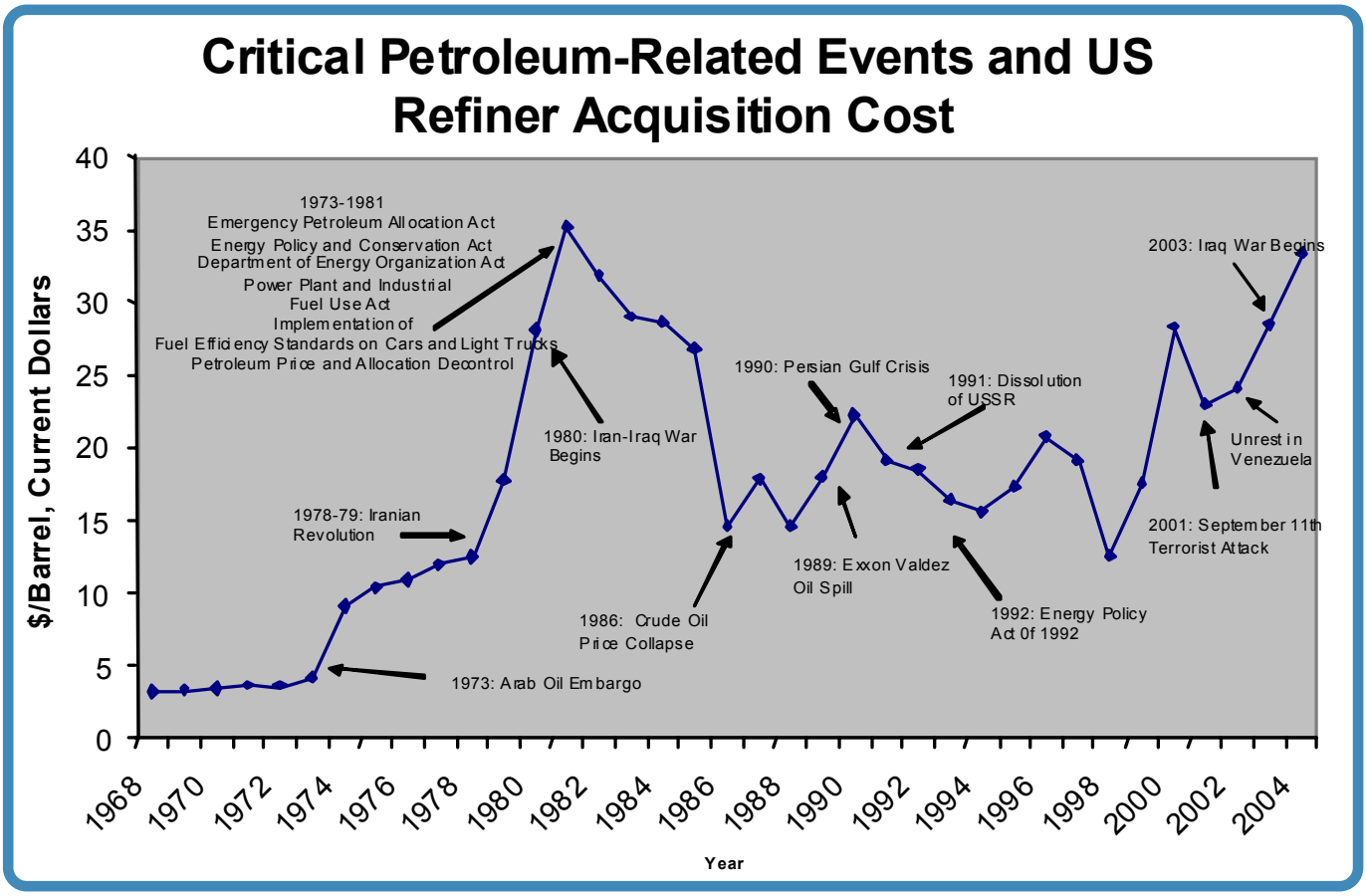
- The price of gasoline is made up of four main components – the crude oil price, refining and distribution costs, retail markup and taxes.
- Generally, the cost of crude oil is the largest component of the price of gasoline, followed by refining, marketing and distribution costs, and gasoline taxes.
- The retail mark up is the smallest component.

- The most recent price increase in Illinois was driven largely by higher crude oil prices.
- The 2001 price spike was related to regional supply difficulties, reflected in higher refining and distribution costs.
- Retail margins have actually grown smaller during the most recent price increase.



Source: EIA, Petroleum Marketing Annual, Petroleum Marketing Monthly, This Week in Petroleum, and IllinoisDepartment of Revenue

International events drive the price of crude oil.

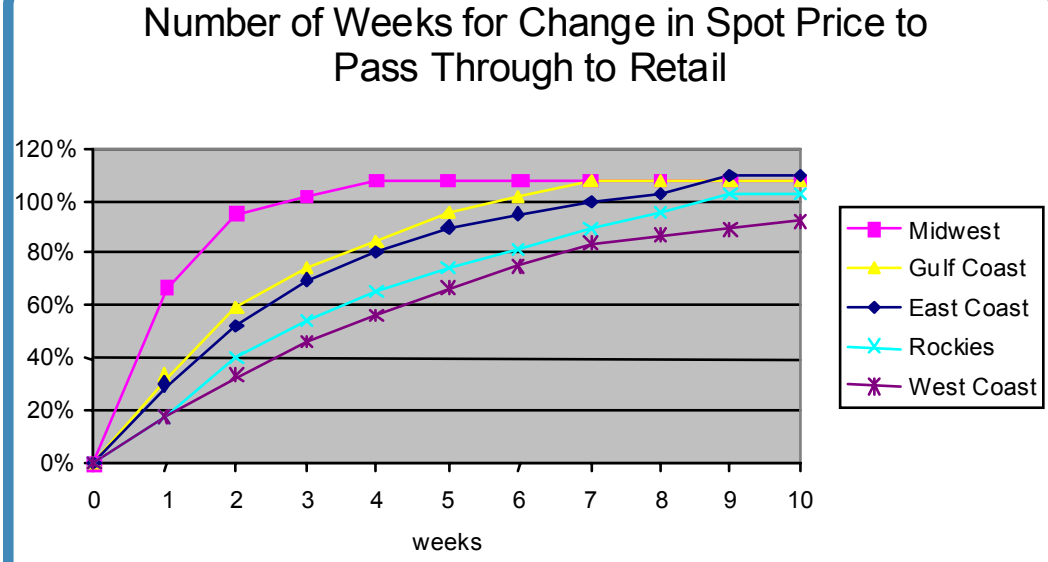


- During the past three decades, a variety of international crises have led to oil price spikes. Some of the more illustrious include the Arab Oil Embargo (1973), the Iranian Revolution and Iran-Iraq War (1978-1981), Iraq's invasion of Kuwait (1990), and, more recently, U.S. military action in Iraq and continued unrest in Venezuela (2002-03). In each case, the crisis contributed to an actual or perceived tightening of oil supplies.
- The continued threat of instability in oil-producing countries like Iraq, Nigeria, Saudi Arabia and Venezuela, and thus the risk of supply disruptions, has added $6-8/barrel to the price of crude in recent months.

U.S. policies have some effect on oil prices.

- The drop in world oil prices from 1982-1986 could be attributed in part to a series of federal statutes that helped to reduce the demand for oil in the U.S. and weakened the market power of OPEC (Organization of Petroleum Exporting Countries).
- On the other hand, environmental regulations, such as Reid Vapor Pressure regulations (1989) and reformulated gasoline requirements (1995) have contributed to short term increases in gasoline prices in the U.S.

Midwest gasoline prices are more volatile than in other regions.



EIA, *Gasoline Price Pass-Through, Jan. 2003*

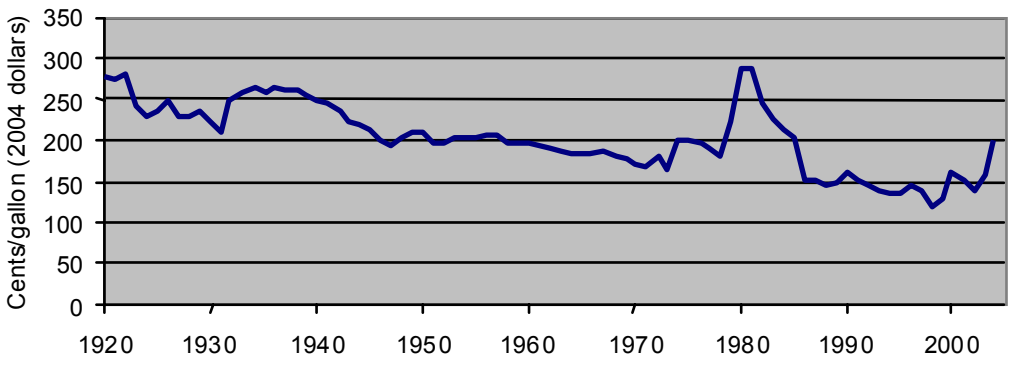
- Wholesale price changes in the Midwest are passed through to consumers more quickly than in other regions of the country.
- Two factors account for this:

1 the sources of supply (refineries) are located relatively close to the main population centers

2 a larger share of retail gasoline is sold by independent retailers, who purchase most gasoline supplies from the spot market.

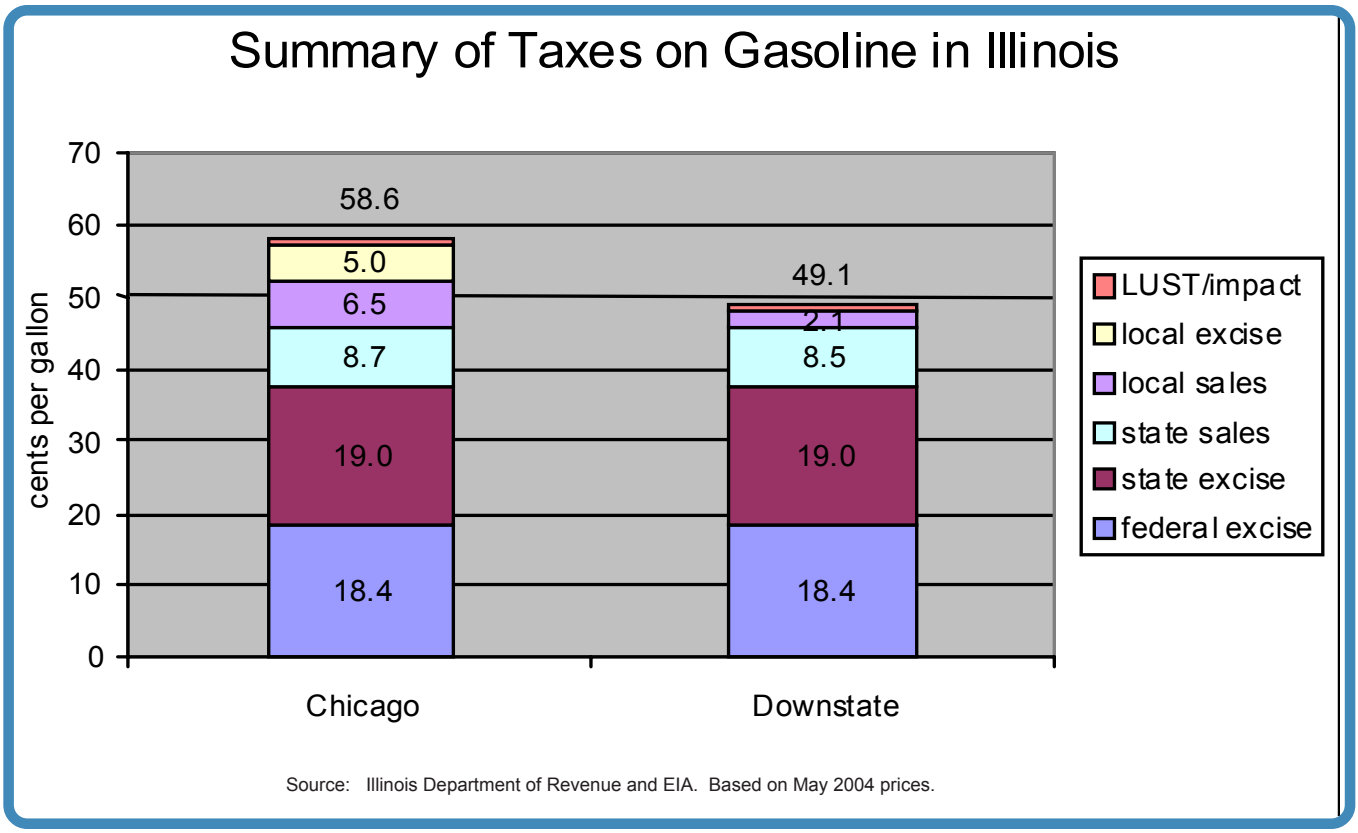
Adjusting for inflation, gasoline prices are actually lower than in the past.

- While recent price increases are significant, in real terms (that is controlling for inflation) the price of gasoline peaked in 1979-1980 during the Iran-Iraq War.
- Thus even at a price exceeding $2.00 plus per gallon, the current price of gasoline remains below past levels, in comparison to the buying power of the U.S. dollar.



EIA, *Short-Term Energy Outlook*

Taxes make up about one-fourth of the gasoline price.



■ Illinois consumers pay from 49 cents to 59 cents per gallon in taxes depending on where they live.

Taxes on Motor Fuels in Illinois

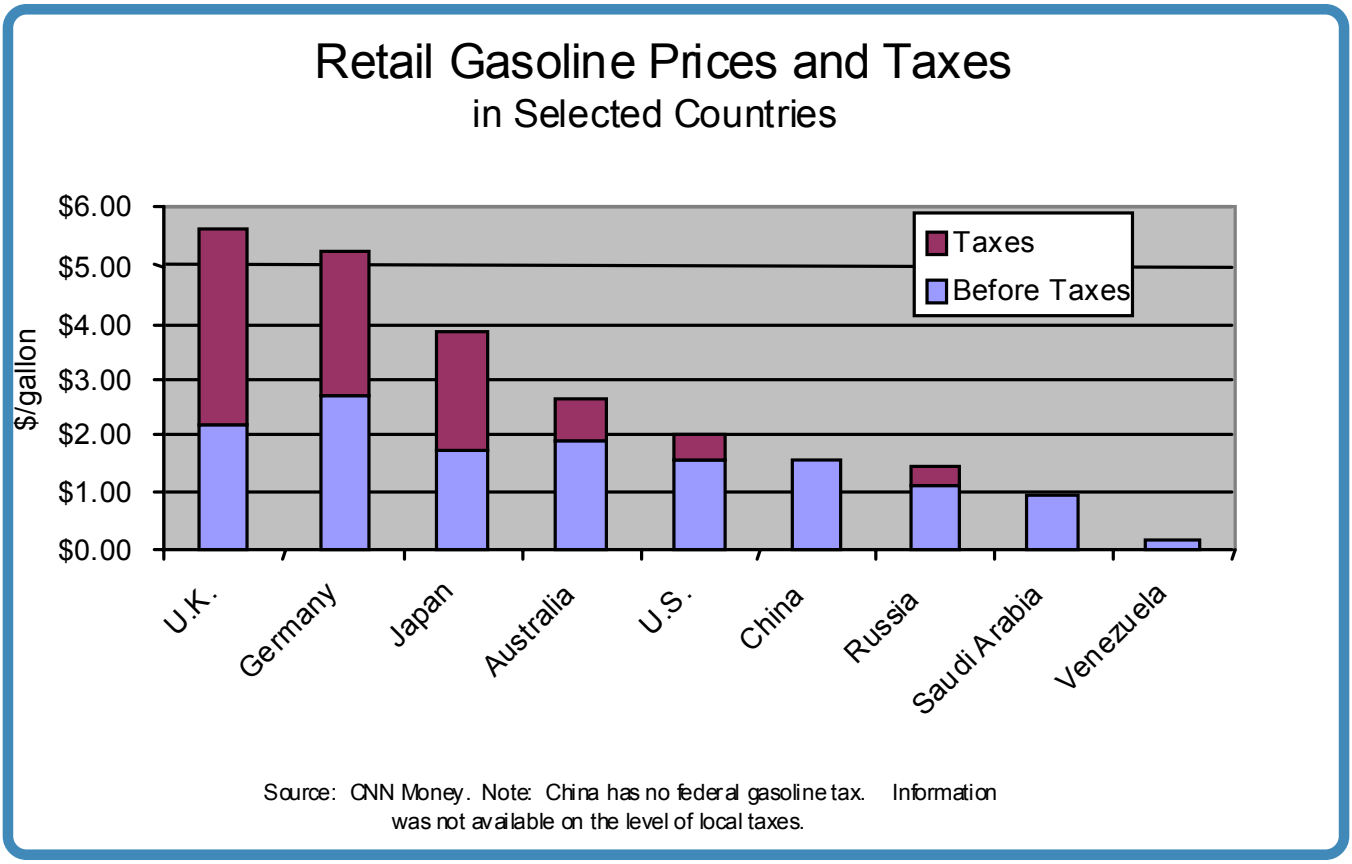
Federal Taxes	18.4¢/gal.
Gasoline Excise Tax	18.3¢/gal.
Underground Tank Tax	0.1¢/gal.
State Motor Fuels Tax	
gasoline	19.0¢/gal.
diesel	21.5¢/gal.
Sales Taxes	6.25% to 9.25%
state share	5.00%
local and county share	1.25%-4.25%

Miscellaneous	
Underground Tank Tax State	0.3¢/gal.
Environmental Impact Fee	0.8¢/gal.
Other Local Taxes*	
County Motor Fuel Tax	0 to 4¢/gal.
Local Motor Fuel Excise Tax	0 to 6¢/gal.
Sales Tax Exceptions	
Gasohol & biodiesel blends — taxed on 80% of sale	
Ethanol & biodiesel — no sales tax	

* County Motor Fuel Tax: DuPage and Kane — 2 cents, and McHenry — 4 cents
Local Excise Tax: Cook — 6 cents
Cook home rule communities — 5 cents

- All Illinois consumers pay the same state and federal motor fuels taxes, while sales taxes and other local taxes vary around the state.
- Higher sales taxes and a local gasoline excise tax contribute to higher taxes in Chicago and many suburbs.

Gasoline prices are much higher in many other countries, due to much higher levels of taxation.

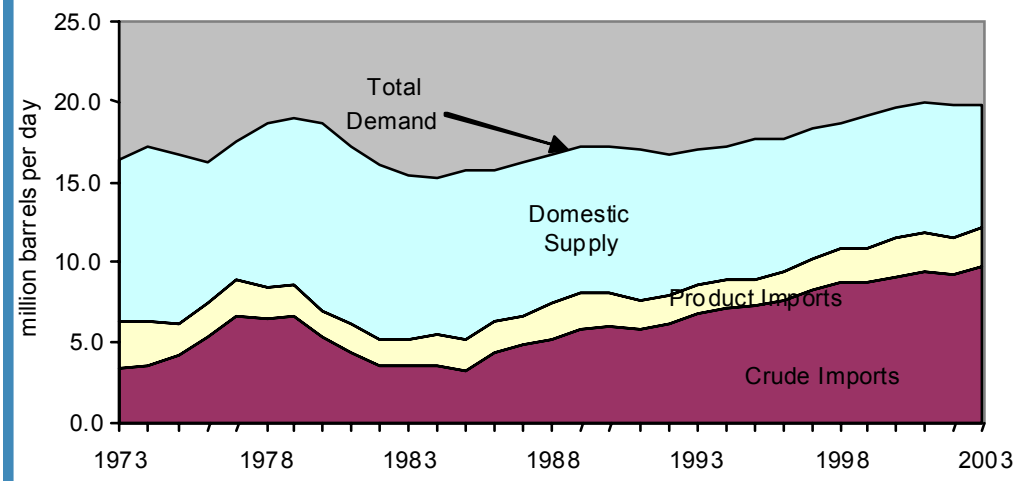


Source: CNN Money. Note: China has no federal gasoline tax. Information was not available on the level of local taxes.

- Gasoline prices across much of Europe reached well over $5.00 per gallon this spring. Consumers paid $5.60 a gallon in the U.K., including $3.40 in taxes.
- Japan, Australia, and all European nations charge much higher taxes than the U.S.
- On the other hand, some oil producing countries do not tax local consumers and keep retail prices very low. In Venezuela, gasoline costs a mere $0.14 per gallon.

Supply Factors

U.S. oil production is declining.

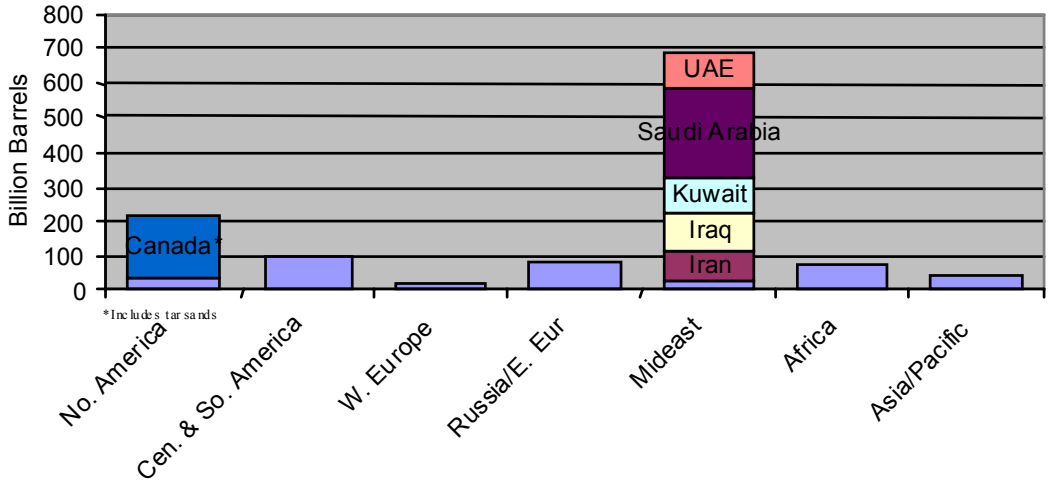


Source: EIA, *U.S. Petroleum Imports and Exports* and *Monthly Energy Review*

- While the U.S. is the second largest oil producing country in the world, it now only supplies 38% of its own oil needs, compared to 68% as recently as 1985.
- Domestic production is declining and is now at a 50-year low. Crude oil production has declined from 9.2 million barrels per day in 1970 to 5.7 million barrels in 1993, a drop of nearly 40%.

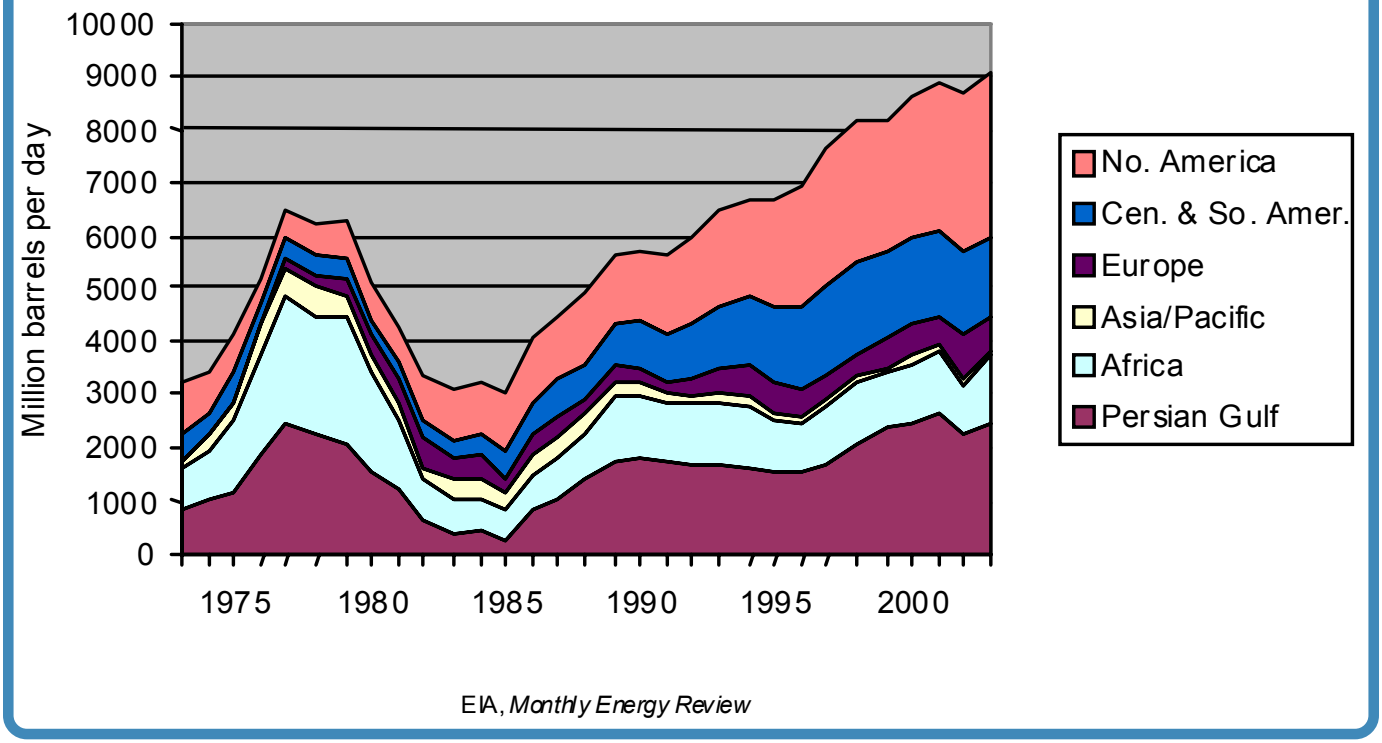
Most world oil reserves are found in the Middle East.

- U.S. proven reserves of oil have dropped to 22.7 billion barrels as of January 1, 2004, down about 20% since 1990, ranking the U.S. 11th among nations.
- Two-thirds of world reserves of conventional oil are found in the Middle East.
- The majority of North American reserves are locked up in the tar sands of Canada.



Source: EIA from *Oil and Gas Journal*

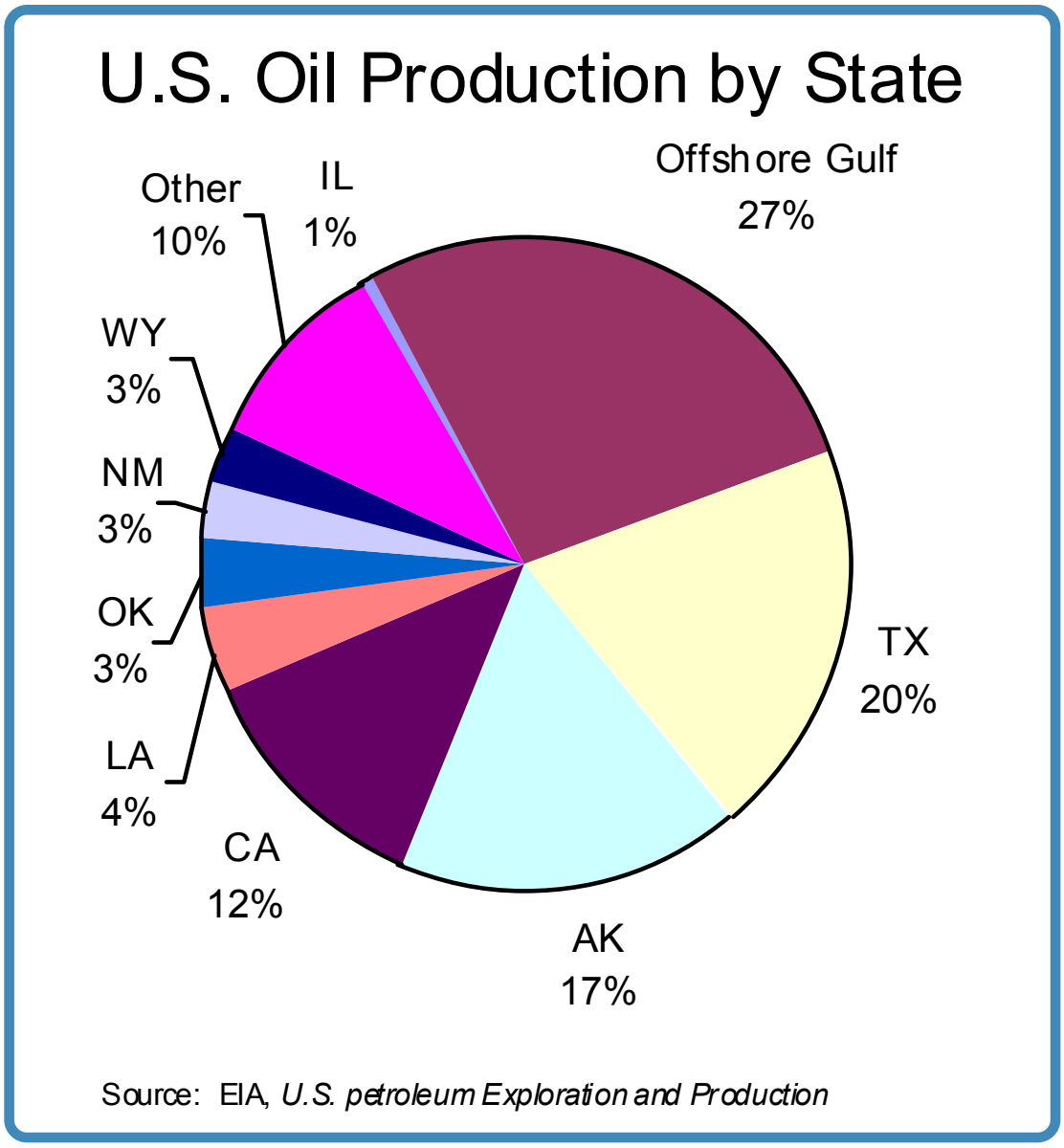
The U.S. has become increasingly dependent upon imports of crude oil and refined products.



EIA, *Monthly Energy Review*

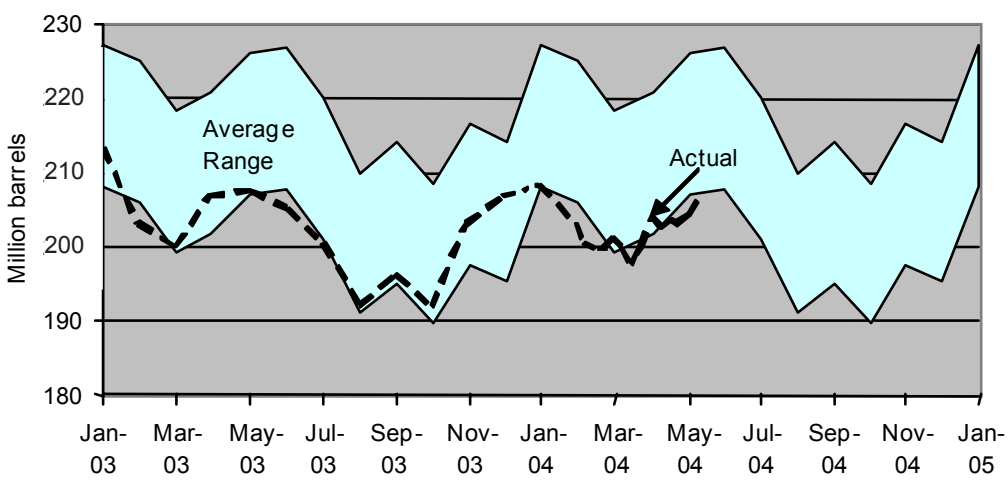
- U.S. crude oil imports have nearly tripled since 1985.
- While imports have grown, U.S. dependence on Middle Eastern oil has lessened since the Arab Oil Embargo of 1973. Three-fourths of U.S. imports came from the Middle East and Africa in 1977, compared to about 40% today.
- Increasingly, the U.S. has purchased oil from the Western Hemisphere and North Atlantic; these sources have grown from 15% of U.S. imports in 1977 to half in 2003.
- Nevertheless, U.S. oil prices are no less vulnerable to a Middle East or other supply disruption, since oil is a global market.

The largest U.S. reserves and production are now found offshore.



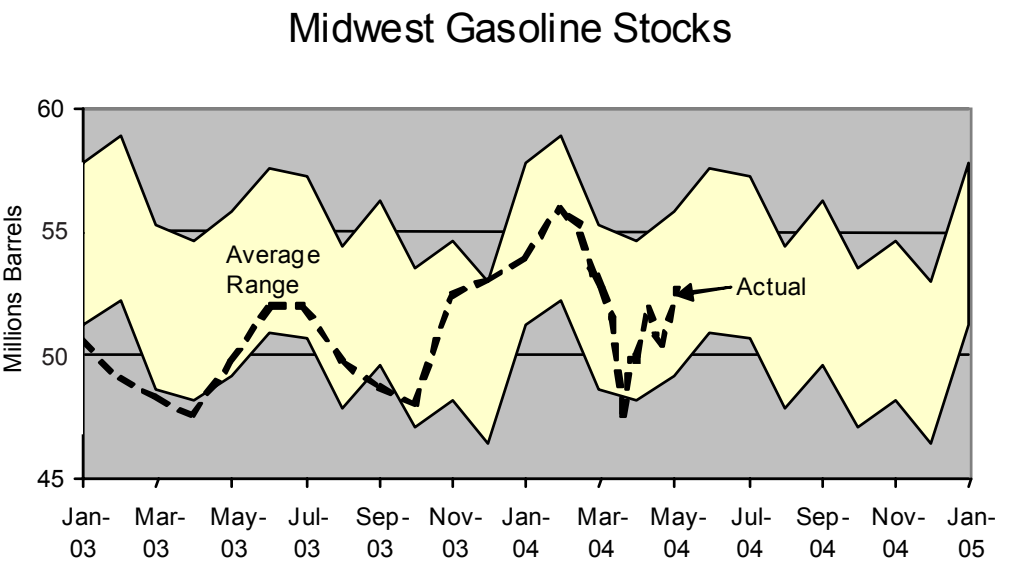
- Most of U.S. reserves and production are concentrated in Texas, Alaska, Louisiana, and California, including the nearby offshore in the Gulf of Mexico and Pacific.
- Illinois contains only one percent of U.S. reserves and one percent of annual production.

Tight gasoline stocks contribute to price volatility.



EIA, *Weekly Petroleum Status Report*

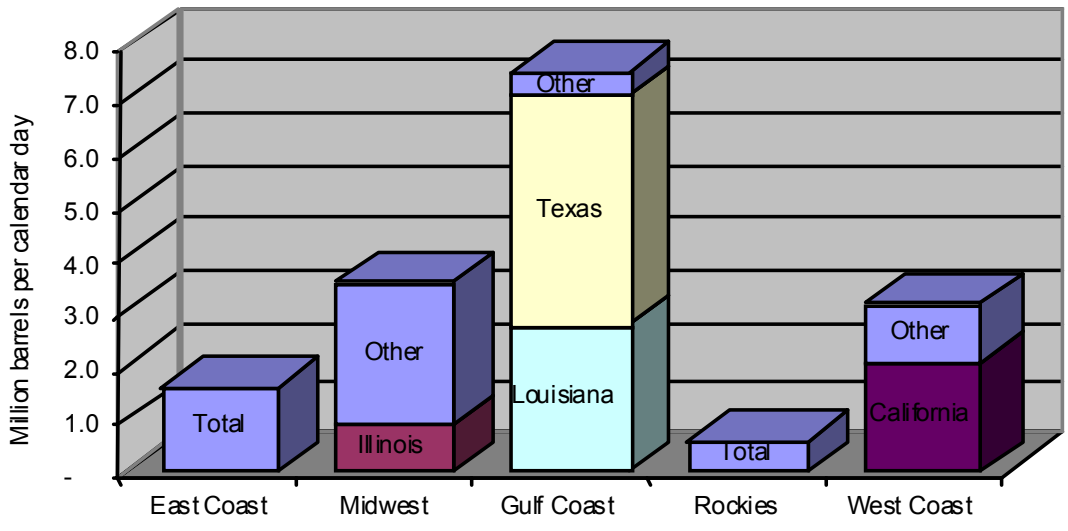
- U.S. stocks of gasoline have been fairly tight during the past year compared to the normal range of stocks in the previous five years.



EIA, *Weekly Petroleum Status Report*

- Stocks in the Midwest were not as tight this spring as stocks nationwide.
- In Illinois, stocks of gasoline at refineries and bulk terminals usually range from 2.5 to 3.5 million barrels, up to one-fourth of which is reformulated gasoline at certain times of the year. Stocks were not unusually low this spring.

While Midwest refiners supply most of the region's needs, interdependence with other regions contributes to price volatility.

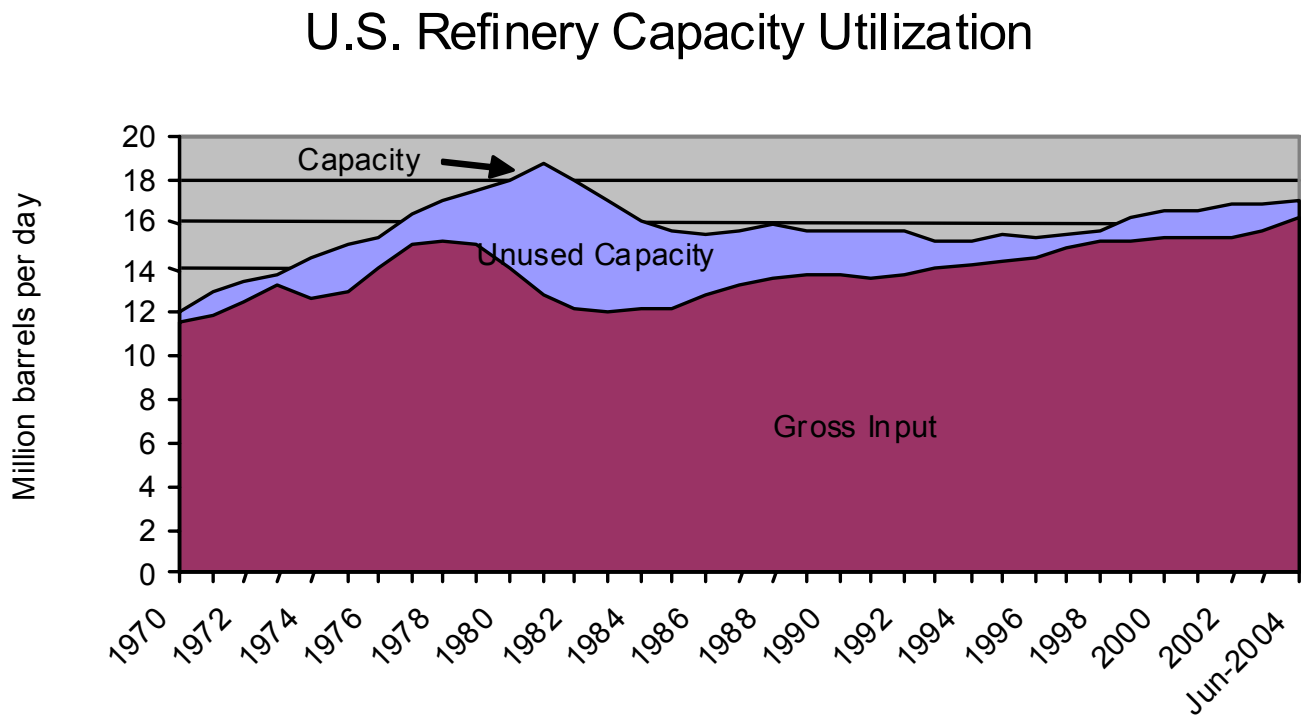


Illinois Refineries	Location	Barrels per Calendar Day
ExxonMobile	Joliet	238,000
Marathon Ashland Petro	Robinson	192,000
PDV Midwest Refining	Lemont	160,000
Phillips 66 Co.	Wood River	288,300

Source: EIA, *Petroleum Supply Annual*

- Midwest refiners supply about 75% of the region's gasoline demand, with most of the rest coming from the Gulf Coast.
- Illinois has the largest refining capacity in the Midwest with four refineries capable of processing 878,000 barrels of crude per day.
- As a result of supply linkages, the Midwest, Gulf Coast, and East Coast supply regions can affect each other during summer high-demand season. Tight supplies in one can drive up prices in all three.

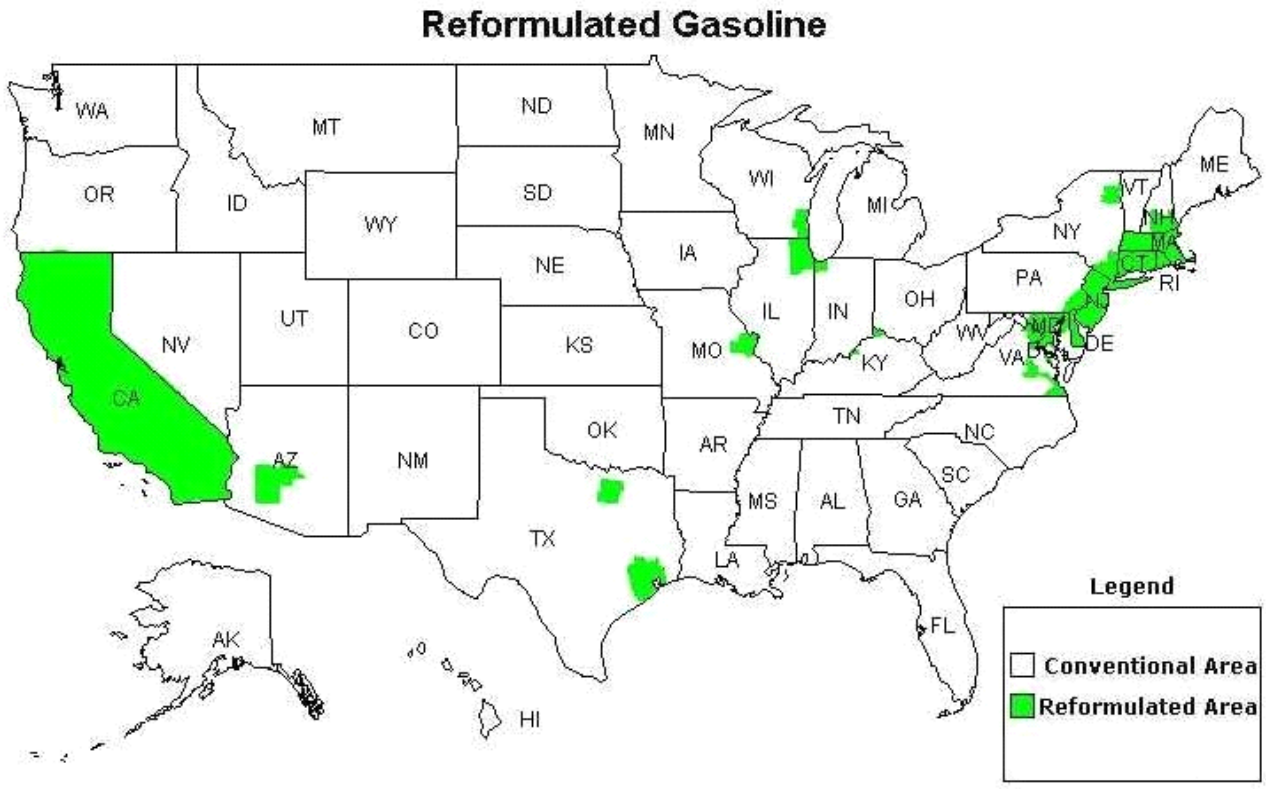
The very high capacity utilization at U.S. refineries poses a risk of supply interruptions and thus price increases.



EIA, *Annual Energy Review* and *U.S. Refinery Operations*

- Petroleum refining capacity has not kept up with petroleum product demand. The approximately 150 domestic refineries (down from 324 refineries in 1981) are able to supply little more than 90% of gasoline demand. (Product imports make up the rest.)
- U.S. refineries are operating at record levels — capacity utilization is now at 96%. Such a high utilization rate makes the entire system susceptible to unforeseen supply disruptions when refinery operations are curtailed for whatever reason.

The supply and additional cost of reformulated gasoline can also drive up prices.

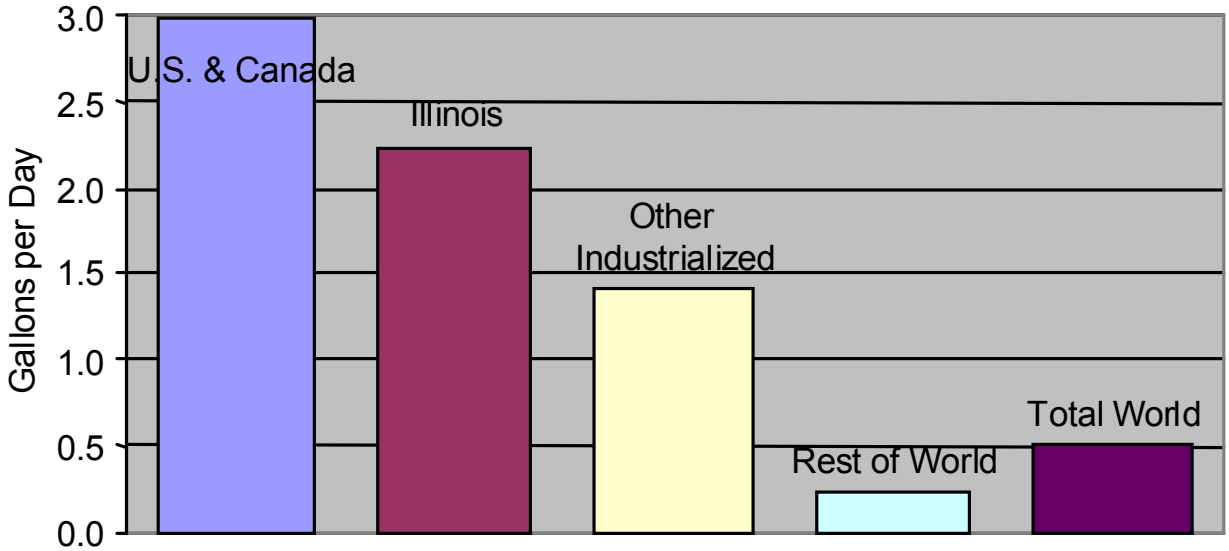


Source: EIA website

- Federal and State environmental regulations require different gasoline formulations in various areas of the country.
- The Chicago area is one of the few regions in the country that uses reformulated gasoline made with ethanol, while the Illinois suburbs of St. Louis also use a fairly unique gasoline that is slightly different from that used in Chicago.
- Gasoline markets have entered a period of uncertainty as MTBE (an additive used in reformulated gasoline in parts of the country) is phased out and replaced by ethanol.
- The additional cost of producing reformulated gasoline has been estimated at 2.5-4 cents per gallon, although supply constraints have occasionally resulted in a larger difference in price.
- In 2001, price increases in the Chicago area were directly related to problems in the supply of reformulated gasoline.

Demand Factors

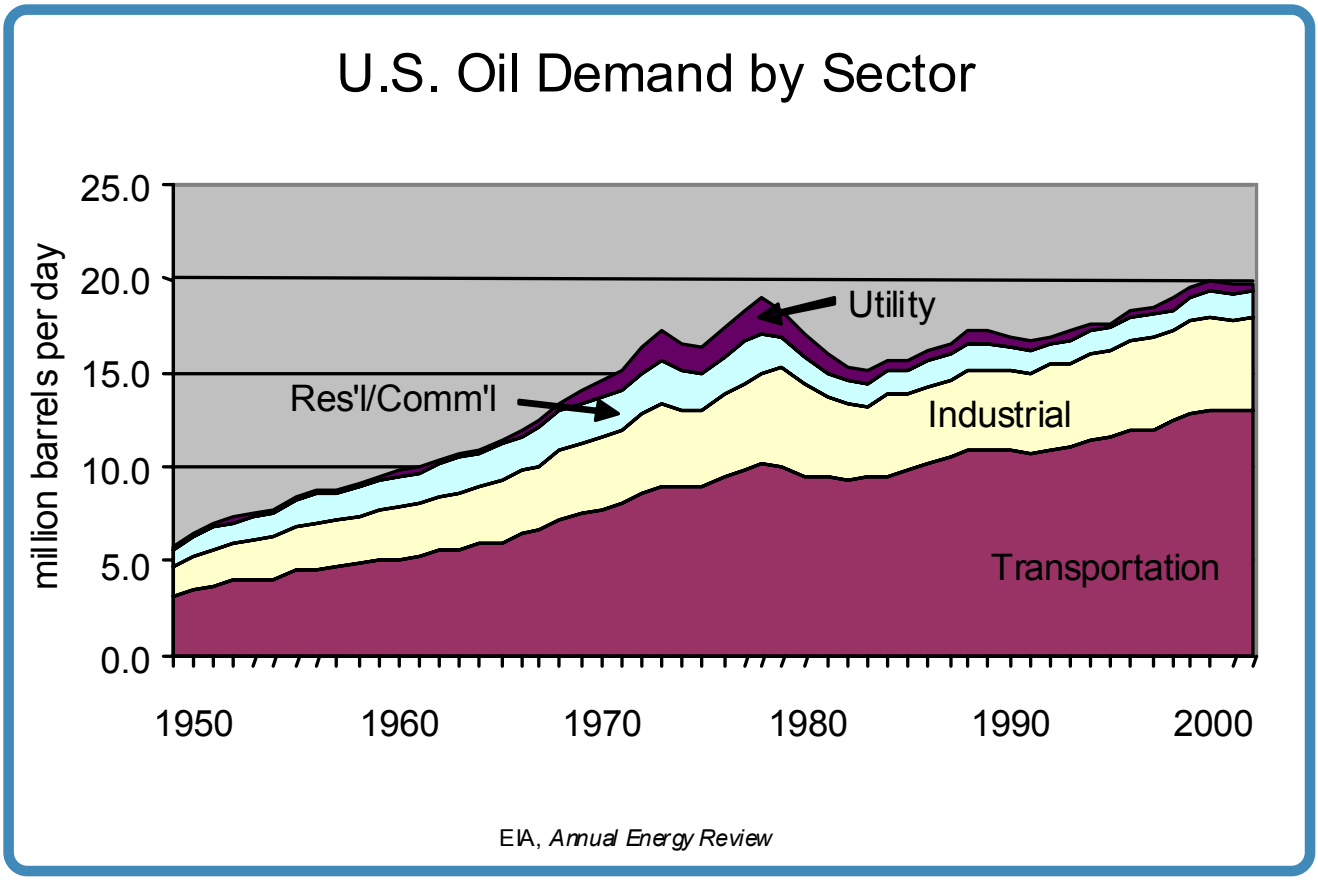
The U.S. is the largest oil consuming nation.



Source: EIA and *International Energy Annual*

- The U.S. consumes about 20 million barrels of oil per day, or about one-fourth of global oil demand.
- On a per capita basis, U.S. oil demand is double that of other industrial nations and nearly six times the world average.

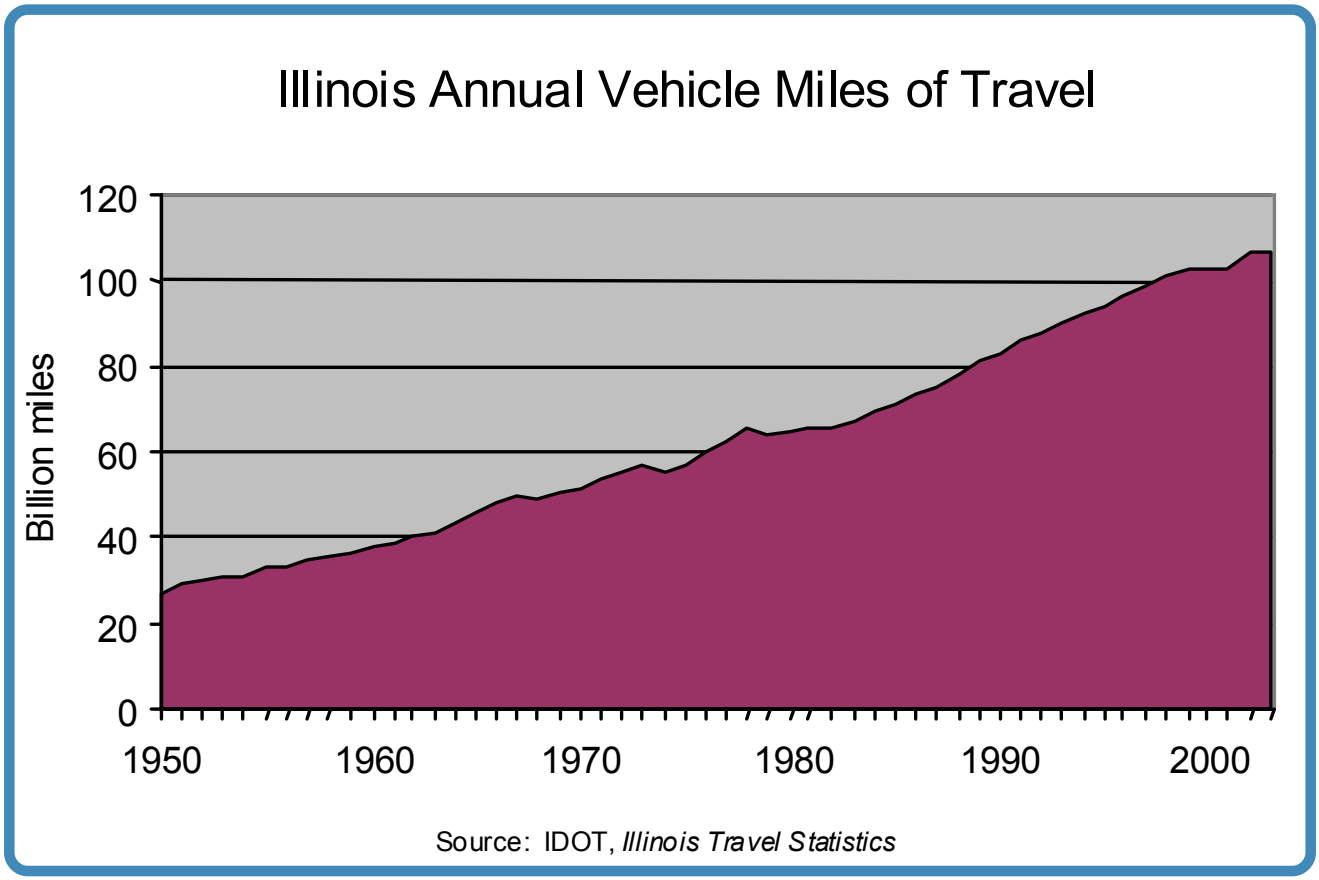
Oil demand has grown steadily, particularly for transportation



EIA, *Annual Energy Review*

- U.S. oil demand has generally grown steadily during the past several decades. The U.S. consumes 30% more oil than twenty years ago and three times as much as in 1950.
- The transportation sector has grown most rapidly and now consumes two-thirds of total petroleum demand, up from half the total in 1950.
- The only periods when U.S. oil demand has declined have been during the Arab Oil Embargo and during the Arab Oil Embargo and during the early 1980s when high prices and such federal programs as CAFE (Corporate Average Fuel Economy) standards, the Fuel Use Act, and the Energy Policy Conservation Act combined to reduce fuel demand.

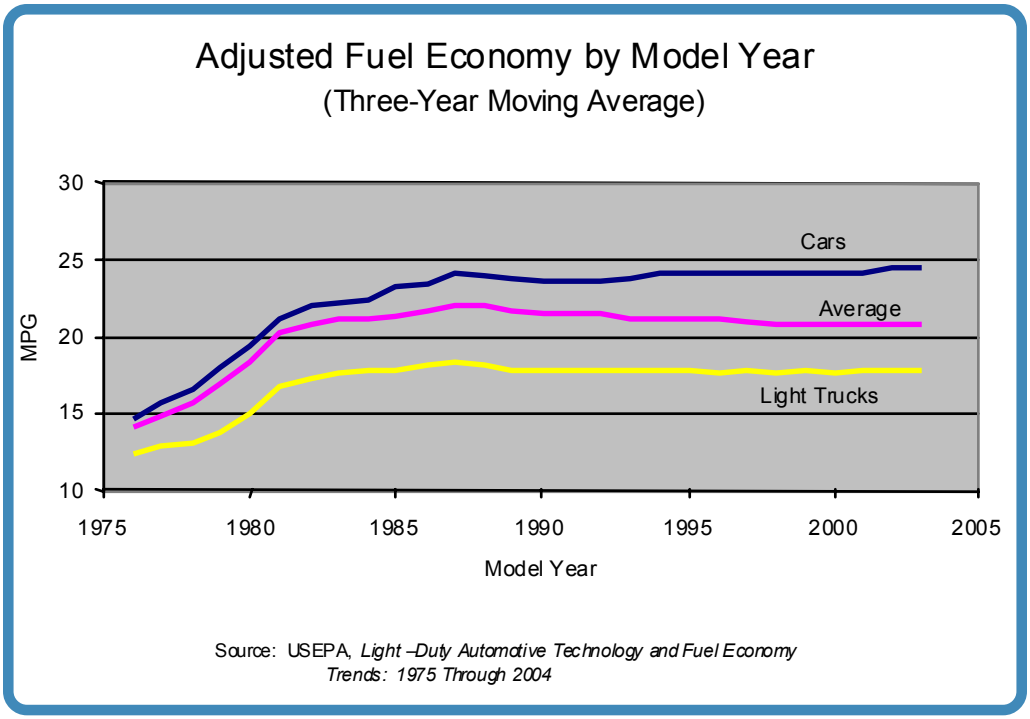
Vehicle travel has grown steadily over time.



Source: IDOT, *Illinois Travel Statistics*

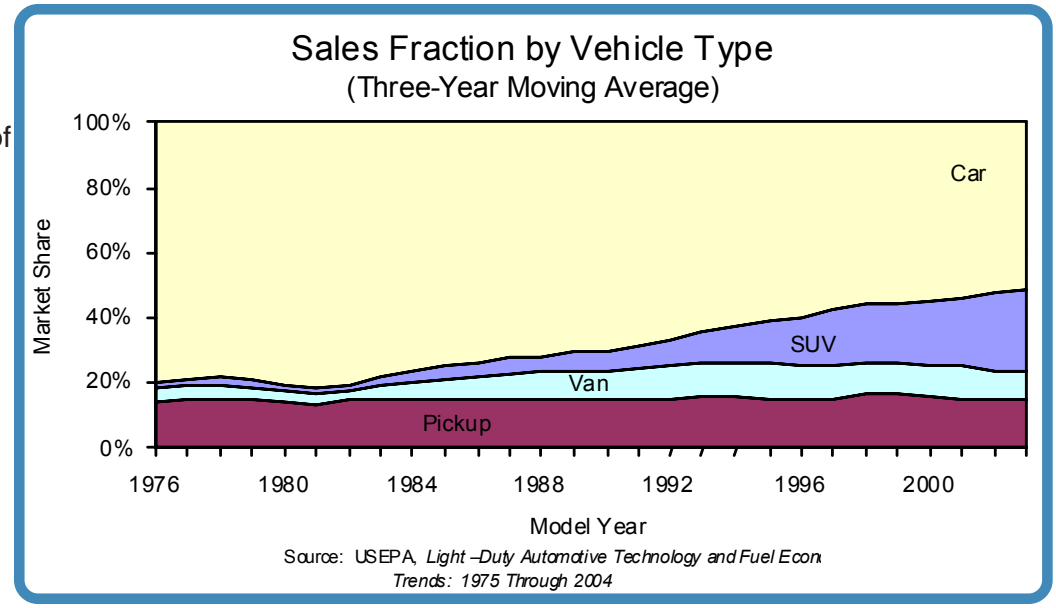
- Vehicle miles of travel on Illinois roads have grown from 27 billion miles in 1950 to 57 billion miles in 1975 to 106 billion miles in 2003, roughly doubling every 25 years.

Vehicle fuel efficiency is declining, due to growth in market shares for heavier vehicles.

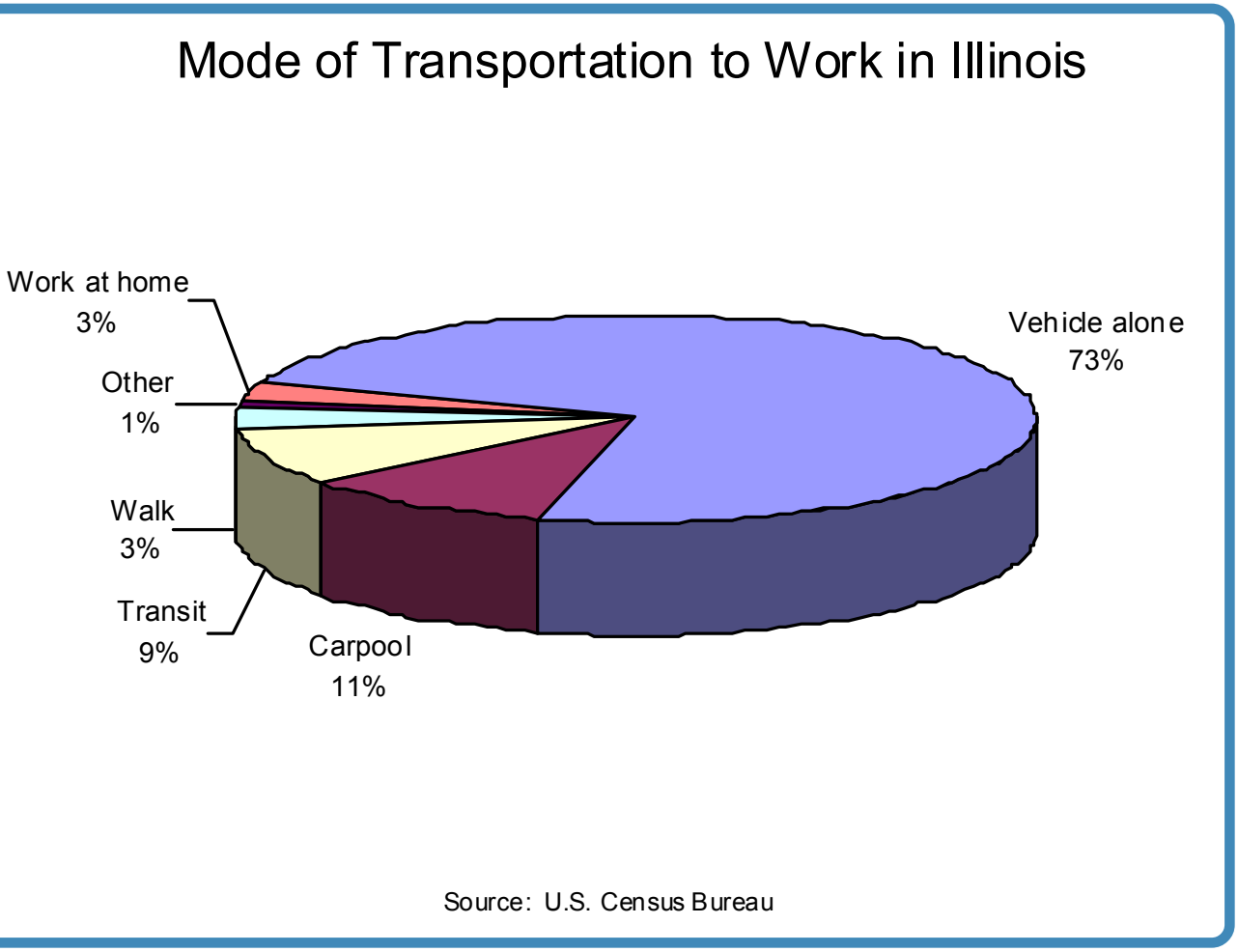


- Since the late 1980s, the fuel efficiency of new light-duty vehicles has gradually declined, now averaging less than 21 miles per gallon.
- New cars average 24.6 miles per gallon, while light trucks – which include pickups, vans and SUVs – average less than 18 mpg.
- Corporate Average Fuel Economy (CAFE) standards for cars remain at the same level as in 1985, although recent regulations will increase the standard for light trucks by 1.5 miles per gallon by 2007.

- The stagnating efficiency largely reflects changes in market shares for different types of vehicles. Light trucks have grown from 20% to 50% of new vehicle sales during the past 20 years.
- SUVs alone now account for more than one fourth of vehicle sales.
- Average vehicle weight has increased by 750 pounds.

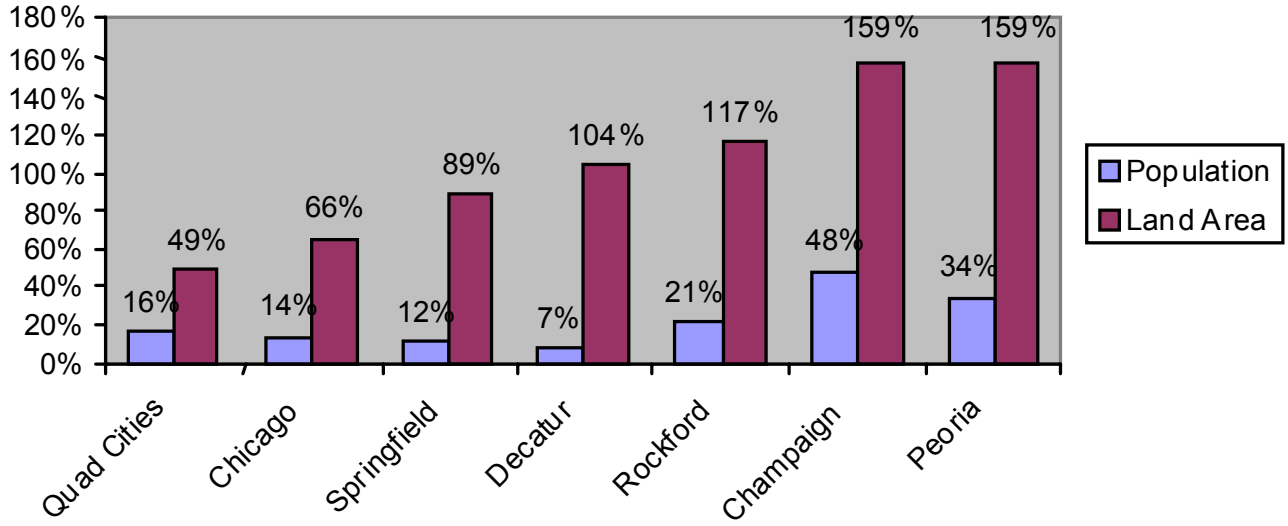


Strong dependence on personal vehicles makes it difficult to reduce fuel consumption.



- Nearly three-fourths of Illinoisans drive to work alone in their vehicle.
- Only in Cook County does a large share of workers (17%) commute using public transportation.

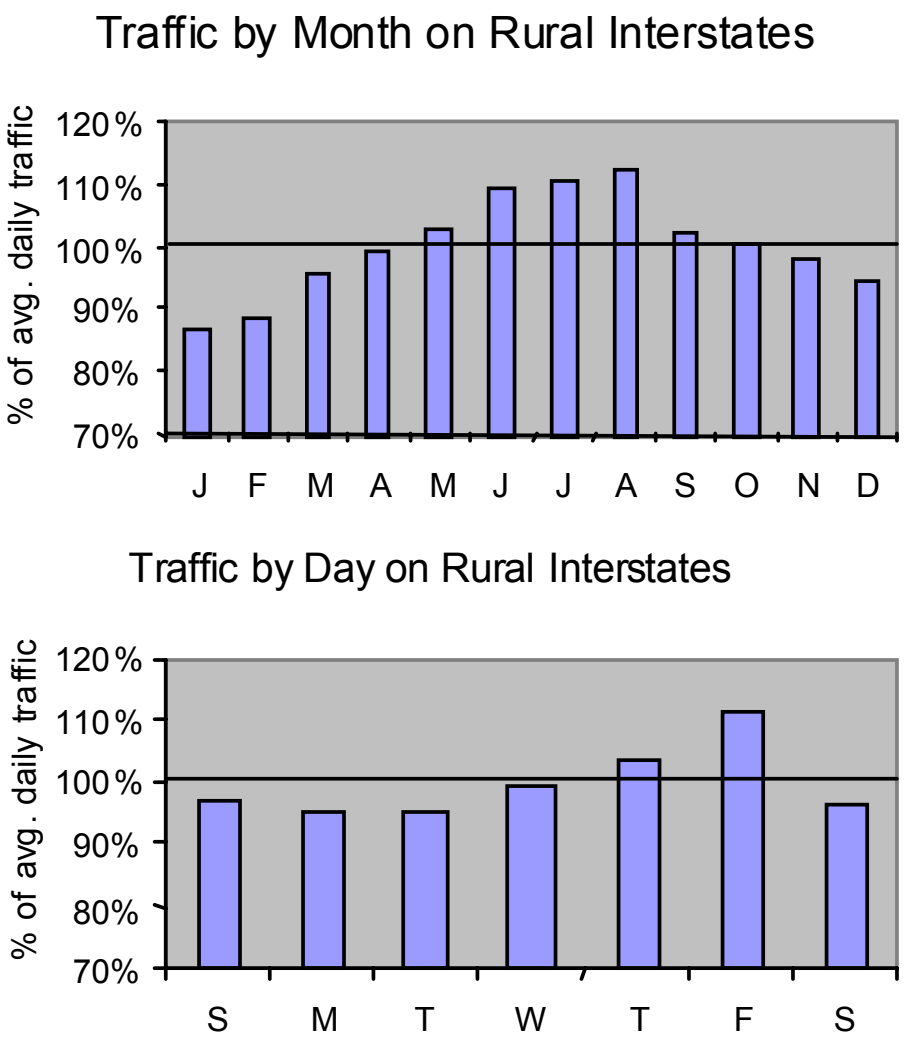
Urban sprawl may contribute to long-term growth in highway fuel demand.



Source: Campaign for Sensible Growth, *Sensible Growth in Illinois: Tools for Local Communities*, from U.S. Census Bureau

- The urban land area in the state's main metropolitan areas has grown much more rapidly than their populations.
- This "sprawl" implies continued growth in vehicle miles of travel.

Weekly and seasonal travel patterns also contribute to price volatility.



Source: IDOT, *Illinois Travel Statistics*

- Vehicle miles of travel are higher toward the end of the week (Friday is the biggest travel day) and during the summer when people are taking vacations.
- Prices often follow a similar pattern, being lowest early in the week and highest on weekends and holiday peak travel times.

—July 2004